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| 09/695,951      | 10/25/2000  | Mark T. Cranna       | 010211.0045         | 4713             |

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| EXAMINER |
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DEXTER, CLARK F

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| ART UNIT | PAPER NUMBER |
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3724

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE  | DELIVERY MODE |
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| 3 MONTHS                               | 02/22/2007 | PAPER         |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary****Application No.**

09/695,951

**Applicant(s)**

CRANNA ET AL.

**Examiner**

Clark F. Dexter

**Art Unit**

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5,7-14 and 21-49 is/are pending in the application.
- 4a) Of the above claim(s) 41-47 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-14 is/are allowed.
- 6) ☒ Claim(s) 1-5,7-11,21-40,48 and 49 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. The appeal brief filed on November 5, 2004 has been received. However, new grounds of rejection are necessitated due to newly discovered prior art including Nakahara, pn 6,834,573, and Japanese Publications 6-716 and 6-717. Rejections based on the newly cited reference(s) follow. Because the new grounds of rejection were NOT necessitated by applicant's response, this Office action is being made **non-final**.

Additionally, because prosecution has been re-opened, the amendment filed on October 6, 2003 has been entered.

### *Claim Objections*

2. Claims 2-5, 7-9, 12-14, 23-26, 29-33, 37-40, 48 and 49 are objected to because of the following informalities:

Claim 29 is still pending, however, it has not been included (or accounted for) in the list of claims submitted with the amendment filed on October 6, 2003.

In claim 2, line 2, "comprise" should read --comprises--.

In claim 12, line 8, "set of teeth" is inaccurate, and should read --set teeth--.

In claim 30, line 2, "comprise" should read --comprises--.

In claim 37, line 2, "comprise" should read --comprises--.

In claim 48, lines 3-4, the recitation "on a side of the tooth facing a kerf wall" positively defines the invention in terms of the kerf wall which is not part of the claimed

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invention, and it is suggested to change it to --on an outer side surface of the tooth-- or the like; in line 5, "acute" appears to be inaccurate, and it seems that it should be changed to --obtuse-- or the like.

In claim 49, line 1, the claim depends upon itself which is improper, and the claim has been interpreted as depending from claim 48; in lines 2-3, the recitation "with respect to a plane defined by a unset tooth" is not sufficiently clear as to how the recited angles are measured.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-3, 5, 27-31 and 34-38 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakahara, pn 6,834,573.

**Regarding claims 1-3 and 5**, Nakahara discloses a saw blade with every structural limitation of the claimed invention including:

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a cutting edge defined by a plurality of teeth (e.g., 3, 5, 7), spaced relative to each other, and a back edge (e.g., see Fig. 1B) located on an opposite side of the band saw blade relative to the cutting edge, the plurality of teeth comprising a plurality of set teeth (e.g., 5, 7), each set tooth defining a tip (e.g., 13 (shown for tooth 3, but the same for teeth 5, 7 according to the disclosure at, for example, col. 4, lines 62-65)), a bend plane (e.g., see Figs. 1C, 3), and a shelf (e.g., formed by 11, 21 (shown for tooth 3, but the same for teeth 5, 7 according to the disclosure at, for example, col. 4, lines 62-65)) located at least partially between the tip and the bend plane (e.g., see Fig. 3) for reducing saw dust passing to the kerf and accumulating on the band saw blade;

[claim 2] wherein:

each of the set teeth (e.g., 5, 7) comprise a relief surface (e.g., the surface to the left of 13) and a cutting surface (e.g., the surface between 13 and 21), the relief surface extending from one side of the tip in a direction opposite that of movement of the band saw blade and terminating at one end of an intermediate surface, and the cutting surface extending from another side of the tip; and

the shelf comprises a shelf surface (e.g., 21) extending from the cutting surface and terminating at another end of the intermediate surface;

[claim 3 (from 2)] wherein:

each of the set teeth has a dimension (S1) defined as the distance between the tip and the shelf of the respective tooth;

each of the set teeth has a dimension (B) defined as the distance between the tip and the bend plane of the respective tooth; and

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a tip of S1/B is within the range of approximately 0.25 to approximately 0.75 (e.g., as shown in Fig. 3, Nakahara clearly teaches the recitation of “approximately 0.25” to one having ordinary skill in the art);

[claim 5 (from 2)] wherein the shelf surface (e.g., 21) terminates in a shelf tip.

**Regarding claims 27-31**, Nakahara discloses a saw blade with every structural limitation of the claimed invention including:

a base having a back edge (e.g., see Fig. 1B);

a cutting edge defined by a plurality of teeth (e.g., 3, 5, 7) spaced relative to each other and being located on an opposite side of the band saw blade relative to the back edge, the plurality of teeth comprising a plurality of set teeth (e.g., 5, 7), each set tooth defining a tip (e.g., 13 (shown for tooth 3, but the same for teeth 5, 7 according to the disclosure at, for example, col. 4, lines 62-65)), a bend plane (e.g., see Figs. 1B, 3), a dust gap (e.g., see Figs. 1C, 3) extending approximately between an outer lateral point of the tip and a lateral surface of the base, and means (e.g., e.g., formed by 11, 21 (shown for tooth 3, but the same for teeth 5, 7 according to the disclosure at, for example, col. 4, lines 62-65)) located between the tip of each set tooth and the bend plane (e.g., see Fig. 3) for reducing the quantity of dust passing through the dust gap and accumulating on the band saw blade;

[claim 28] wherein the means for reducing the quantity of dust comprises at least one shelf (e.g., formed by 11, 21 (shown for tooth 3, but the same for teeth 5, 7 according to the disclosure at, for example, col. 4, lines 62-65));

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[claim 29 (from 28)] wherein the means for reducing the quantity of dust further comprises a relief portion (e.g., see Fig. 1C) extending from the tip of a set tooth at an acute angle to a transverse axis of the saw blade (e.g., if a transverse axis of the saw blade is taken to be the one that bisects the saw blade as shown in Fig. 1C (i.e., it extends vertically in Fig. 1C through the middle of the blade), then the sides of the teeth extend at an acute angle with respect to such an axis and can be considered relief portions));

[claim 30 (from 28)] wherein:

each of the set teeth comprise a relief surface (e.g., the surface to the left of 13) and a cutting surface (e.g., the surface between 13 and 21), the relief surface extending from one side of the tip in a direction opposite that of movement of the band saw blade and terminating at one end of an intermediate surface, and the cutting surface extending from another side of the tip; and

the shelf comprises a shelf surface (e.g., 21) extending from the cutting surface and terminating at another end of the intermediate surface;

[claim 31 (from 30)] wherein:

each of the set teeth has a dimension (S1) defined as the distance between the tip and the shelf of the respective tooth;

each of the set teeth has a dimension (B) defined as the distance between the tip and the bend plane of the respective tooth; and

a ratio of S1/B is within the range of approximately 0.25 to approximately 0.75 (e.g., as shown in Fig. 3, Nakahara clearly teaches the recitation of “approximately 0.25” to one having ordinary skill in the art);

**Regarding claims 34-38**, Nakahara discloses a saw blade with every structural limitation of the claimed invention including:

a base having a back edge (e.g., see Fig. 1B);

a cutting edge defined by a plurality of teeth (e.g., 3, 5, 7) spaced relative to each other end being located on an opposite side of the band saw blade relative to the back edge, the plurality of teeth comprising a plurality of set teeth (e.g., 5, 7), each set tooth defining a tip (e.g., 13 for teeth 5, 7), a bend plane (e.g., see Figs. 1B, 3), a dust gap dimension (e.g., see Figs. 1C, 3) extending approximately between an outer lateral point of the tip and a lateral surface of the base; and

means (e.g., formed by 11, 21 for teeth 5, 7) located at least partially between the tip and the bend plane for effectively reducing the dust gap dimension (e.g., see Fig. 3);

[claim 35] wherein the means for effectively reducing the dust gap dimension comprise at last one shelf (e.g., formed by 11, 21 for teeth 5, 7);

[claim 36 (from 35)] wherein the means for effectively reducing the dust gap dimension further comprises a relief portion (e.g., see Figs. 1C, 3) extending from the tip of the respective set tooth at an acute angle to a transverse axis of the saw blade (e.g., if a transverse axis of the saw blade is taken to be the one that bisects the saw blade as shown in Fig. 1C (i.e., it extends vertically in Fig. 1C through the middle of the blade),



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then the sides of the teeth extend at an acute angle with respect to such an axis and can be considered relief portions));

[claim 37 (from 35)] wherein:

each of the set teeth comprise a relief surface (e.g., the portion to the left of 13 for teeth 5, 7) and a cutting surface (e.g., the portion between 13 and 21 for teeth 5, 7), the relief surface extending from one side of the tip in a direction opposite that of movement of the band saw blade and terminating at one end of an intermediate surface, and the cutting surface extending from another side of the tip; and

the shelf comprises a shelf surface (e.g., 21) extending from the cutting surface and terminating at another end of the intermediate surface;

[claim 38 (from 37)] wherein:

each of the set teeth has a dimension (S1) defined as the distance between the tip and the shelf of the respective tooth;

each of the set teeth has a dimension (B) defined as the distance between the tip and the bend plane of the respective tooth; and

a ratio of S1/B is within the range of approximately 0.25 to approximately 0.75 (e.g., as shown in Fig. 3, Nakahara clearly teaches the recitation of "approximately 0.25" to one having ordinary skill in the art).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 4, 7-11, 21, 22, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakahara, pn 6,834,573.

Nakahara discloses a saw blade with almost every structural limitation of the claimed invention but lacks the specific ratios and dimensions set forth. However, these ratios and dimensions would be the mere discovery of the optimum or workable ranges within the general conditions of the prior art and therefore obvious to one having ordinary skill in the art.

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7. Claims 23, 24, 32, 33, 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakahara, pn 6,834,573 in view of Japanese Publication 6-716 (hereafter JP '716).

Nakahara discloses a saw blade with almost every structural limitation of the claimed invention but lacks:

[claim 23 (from 3); claim 32 (from 31); claim 39 (from 38)] wherein:

the plurality of set teeth each comprise a second shelf;

each second shelf comprises a second shelf surface, and each second shelf defines a dimension (S2) extending between the tip of the respective tooth and the second shelf;

[claim 24 (from 23); claim 33 (from 32); claim 40 (from 39)] wherein  $S2 = (B + S1)/2$  and S1 is within the range of between approximately .13 inch and approximately .16 inch.

Regarding claims 23, 32 and 39, such second shelf configurations are old and well known in the art and provide various well known benefits including facilitating the accommodation of various sizes of chips and chips formed from various types of materials. JP '716 discloses such a second shelf (e.g., see Fig. 6). Therefore, it would have been obvious to one having ordinary skill in the art to provide such a second shelf on the saw blade of Nakahara for the well known benefits including those described above.

Regarding claims 24, 33 and 40, the combination of Nakahara and JP '716 teaches a saw blade with almost every structural limitation of the claimed invention but

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lacks the specific ratios and dimensions set forth. However, these ratios and dimensions would be the mere discovery of the optimum or workable ranges within the general conditions of the prior art and therefore obvious to one having ordinary skill in the art.

8. Claims 48 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakahara, pn 6,834,573 in view of Chapin, pn 2,637,355.

Nakahara discloses a saw blade with almost every structural limitation of the claimed invention but lacks:

[claim 48] wherein the means for reducing the quantity of dust passing through the duct gap and accumulating on the band saw blade includes a relief portion defining a substantially flat surface formed on an upper corner of a respective tooth on a side of the tooth facing a respective kerf wall, wherein the relief portion extends between the shelf and the tip of the respective tooth and is oriented at an acute angle with respect to a remaining portion of the respective side of the tooth for reducing an effective dust gap of the tooth;

[claim 49 (from 48)] wherein the relief portion is oriented at an angle within the range of approximately 0° and approximately 2° with respect to a plane defined by an unset tooth.

Regarding claim 48, such tooth configurations are old and well known in the art and provide various well known benefits including to improve the smoothness and the normality of the cut. Chapin discloses a saw with such a tooth configuration (e.g., see Figs. 3-7). Therefore, it would have been obvious to one having ordinary skill in the art

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to provide such a tooth configuration on the saw blade of Nakahara for the well known benefits including those described above.

Regarding claim 49, Nakahara teaches a saw blade with almost every structural limitation of the claimed invention but lacks the specific range of angles set forth. However, to provide this range would be the mere discovery of the optimum or workable ranges within the general conditions of the prior art and therefore obvious to one having ordinary skill in the art.

### ***Conclusion***

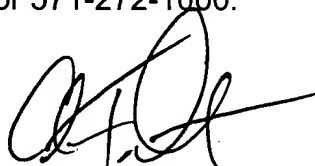
9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clark F. Dexter whose telephone number is (571)272-4505. The examiner can normally be reached on Mondays, Tuesdays, Thursdays and Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer D. Ashley can be reached on (571)272-4502. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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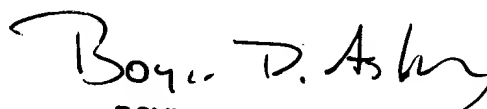
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**Clark F. Dexter**  
**Primary Examiner**  
**Art Unit 3724**

cfd

February 15, 2007



**BOYER D. ASHLEY**  
**SUPERVISORY PATENT EXAMINER**